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# Tsunami Early Warning and Validation System Based on Sea Water Level Changes Using Automatic Water Level

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Fatkurrohman ; Agus Sofwan ; Ahmad Furqon ; Sugiarto ; Maulana Putra ; Prada Wellyantama [All Authors](#)

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**Abstract**

**Document Sections**

- I. Introduction
- II. Methods
- III. Implementation
- IV. Results and Discussion
- V. Conclusion

**Abstract:** Indonesia's geographical location in the Ring of Fire region makes it prone to tectonic earthquakes and tsunamis. To enhance tsunami early warning systems, this research focuses on designing an IoT-integrated sea level observation system that detects and validates tsunami occurrences based on sea level changes. The system utilises Automatic Water Level sensors, which provide high-accuracy and real-time measurements. The IoT-based system enables secure and reliable data transmission, ensuring accurate and timely information for tsunami early warnings. Field testing at Rakata Island demonstrated the system's effectiveness, significantly increasing data transmission from 12 % to 97%. The system can detect sea-level changes and anomalies, triggering a tsunami warning system with a red LED light, MP3 player, and speaker. This research contributes to the development of a reliable and efficient tsunami early warning system, enhancing disaster mitigation efforts in Indonesia.

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